LFG Practical Exercise

Miriam Butt

February 16, 2009

1   Walkthrough

- Open up a Terminal Window.

- Go to a directory of your choice (where you want to store your grammar) — create a new one if you need/want.

  To change into a directory: `cd Directory-Name`

  To create a new directory: `mkdir Directory-Name`

  To see what's in your directory: `ls`

- Open up a texteditor of your choice – you are going to be creating a file called `toy-eng.lfg`. If you are using emacs, then simply type `emacs toy-eng.lfg &` in the Terminal.

- Type `xle` into your Terminal. The xle process should now start.

- Type `documentation` into your Terminal. This should automatically call up a web browser and put you into the xle documentation. Alternatively, if that doesn't work, point your browser to `/usr/lcoal/xle/doc/xle_toc.html`.

- Go to the *Walkthrough* section and work through it. Copy and paste the bits of the grammar into your text editor as specified. Save the grammar in the same directory you are working in with xle.

- Do the *Walkthrough* until the section on *Projections* (and if you do not understand the section on *Resolution of Functional Uncertainties*, skip this.

2 Expanding the Grammar

Keep working with your little grammar `toy-eng.lfg` (if you have skipped the Walkthrough part, I've put a grammar of that name in the grammars directory, so work with that).

- Play with the grammar by adding more lexical entries for verbs and nouns.

- After just a few, you should get tired of copying/pasting. Introduce *templates* into your grammar to make life easier.

  For example, introduce the following verb templates into the template section of your grammar.

  ```
  INTRANS(P) = (^ PRED)='P<(^ SUBJ)>'.
  TRANS(P) = (^ PRED)='P<(^ SUBJ)(^ OBJ)>'.
  OPTTRANS(P) = {@(INTRANS P)|@(TRANS P)}.
  ```

  Then change your lexical entries so that they call up these templates.

  ```
  walks    V * @(INTRANS WALK)
           N * (^ PRED)='WALK'.
  ```

- If you have more complex entries for nouns, make templates for those as well.

3 Subject-Verb Agreement

Your grammar does not check for subject-verb agreement yet. Figure out how you would do that and add it to the grammar (Hint: the verb should say what it agrees with, e.g.: `(^SUBJ NUM) = sg`).

4 Adjectives

Your grammar does not as yet allow for adjectives.

1. Add a rule for AP (Adjective Phrase) to your grammar.

2. Introduce the AP at the appropriate place in the NP rule.

3. Not all NPs have adjectives and there might be more than one. In fact, as adjectives are adjuncts, they function very much like the adjunct PPs the grammar already allows for. So model your adjectives after the call to the PP rule.

5 Lexical Rules — The Passive

Passives and other valency changing operations like the English *dative shift* are usually done via *Lexical Rules*. An example of how the passive lexical rule is typically implemented in XLE (also see the XLE documentation, section on *Grammatical Notations*) is shown below.

```
PASS(SCHEMATA) = {SCHEMATA          ''SCHEMATA is the variable''
                  (^ PASSIVE) = -   ''nothing happens here, no passive''
                  | SCHEMATA
                  (^ PASSIVE) = +      ''mark as passive''
                  (^ OBJ)-->(^ SUBJ)   ''obj becomes subj in passive''
                  (^ SUBJ)-->NULL}.    ''subj goes to NULL (adjunct)''
```

This lexical rule goes into your `Templates` section, since it is a short-cut of sorts. One you have got this in your `Templates` section, you can augment your lexical entries to allow for passivization.

Or, if you have defined templates for `TRANS` (and `DITRANS`), you can just let the passive lexical rule operate on these.

```
TRANS (P) = @(PASS (^ PRED)='P<(^ SUBJ) (^ OBJ)>').
DITRANS (P) = @(PASS (^ PRED)='P<(^ SUBJ) (^ OBJ) (^ OBJ2)>').
```

- Fix your grammar so that all the transitive verbs which can be passivized, are indeed passivizable.

- Then try to parse a sentence like *a banana was devoured*.

- For this you will also need to add an entry for *was*. This should check that the structure is indeed passive (via a constraining equation).